

CLAIMS

What is claimed is:

1. A high-intensity light comprising:
a side-emitting optoelectronic device adapted to emit light of a desired
5 color;
a heat sink adjacent the optoelectronic device;
a reflector at least partially surrounding the optoelectronic device, the
reflector spaced a distance from the optoelectronic device; and
a window portion sized to output the light in a desired arc.
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2. The high-intensity light of claim 1, wherein the optoelectronic device
includes a side-emitting light-emitting diode.
3. The high-intensity light of claim 1, wherein the desired color is one of
15 red, green, and white.
4. The high-intensity light of claim 1, wherein the heat sink is made from
aluminum.
- 20 5. The high-intensity light of claim 1, wherein the optoelectronic device
defines a characteristic dimension.
6. The high-intensity light of claim 5, wherein the characteristic dimension
is approximately 3 millimeters.

7. The high-intensity light of claim 5, wherein the reflector further comprises a plurality of facets.

8. The high-intensity light of claim 7, wherein each facet defines a width,
5 and wherein the width of each facet is approximately equal to the characteristic dimension.

9. The high-intensity light of claim 5, wherein the distance between the reflector and the optoelectronic device is approximately equal to five times the
10 characteristic dimension.

10. The high-intensity light of claim 1, wherein the desired arc is at least 90 degrees.

11. The high-intensity light of claim 1, wherein the side-emitting
15 optoelectronic device further comprises a truncated substantially spherical portion and a frustoconical portion having a concave top, the frustoconical portion disposed adjacent the truncated substantially spherical portion.

12. The high-intensity light of claim 1, wherein the light is a navigation light.
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13. The high-intensity light of claim 1, wherein the reflector includes a movable portion.

14. The high-intensity light of claim 13, wherein the movable portion tilts
25 relative to a central axis defined by the side-emitting optoelectronic device.

15. The high-intensity light of claim 1, wherein the reflector includes a reflective surface having a saw-tooth pattern.

16. The high-intensity light of claim 15, wherein the saw-tooth pattern
5 includes a plurality of teeth, each tooth defining a reflective surface that is angled relative to a central axis defined by the side-emitting optoelectronic device to reflect light emitted by the side-emitting optoelectronic device along paths that are substantially perpendicular to the central axis.

10 17. The high-intensity light of claim 1, further comprising a second reflector positioned to reflect emitted light along paths that are substantially perpendicular to a central axis defined by the side-emitting optoelectronic device.

18. The high-intensity light of claim 17, wherein the second reflector is a
15 conical reflector positioned above a top surface of the side-emitting optoelectronic device.

19. The high-intensity light of claim 17, wherein the second reflector includes a reflective coating applied to the top surface of the side-emitting optoelectronic device.

20. A light-emitting apparatus powered by a direct current, the apparatus comprising:

a substantially water-tight housing including a base, a reflector portion having a plurality of facets, and a window portion defining an arc;

5 a side-emitting optoelectronic device supported within the housing and spaced a distance from the reflector portion, the optoelectronic device emitting light of a desired color when powered by the direct current, at least some of the facets redirecting a portion of the emitted light toward the window portion.

10 21. The light-emitting apparatus of claim 20, wherein the base is made from a material containing aluminum.

22. The light-emitting apparatus of claim 20, wherein the desired color is one of red, green, and white.

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23. The light-emitting apparatus of claim 20, wherein the optoelectronic device has a characteristic dimension, and the dimension is approximately 3 millimeters.

24. The light-emitting apparatus of claim 23, wherein the characteristic
20 dimension is approximately 3 millimeters.

25. The light-emitting apparatus of claim 23, wherein each of the plurality of facets is substantially rectangular and each facet defines a width.

25 26. The light-emitting apparatus of claim 25, wherein the width of each facet is approximately equal to the characteristic dimension.

27. The light-emitting apparatus of claim 23, wherein the distance between the reflector and the optoelectronic device is approximately equal to five times the characteristic dimension of the optoelectronic device.

5 28. The light-emitting apparatus of claim 20, wherein the desired arc is at least 90 degrees.

29. The light-emitting apparatus of claim 20, wherein the optoelectronic device further comprises a truncated substantially spherical portion and a frustoconical
10 portion having a concave top, the frustoconical portion disposed adjacent the truncated substantially spherical portion.

30. The light-emitting apparatus of claim 20, wherein the optoelectronic device includes a side-emitting light-emitting diode.
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31. The light-emitting apparatus of claim 20, wherein the light is a navigation light.

32. The light-emitting apparatus of claim 20, wherein the reflector includes a
20 movable portion.

33. The light-emitting apparatus of claim 32, wherein the movable portion tilts relative to a central axis defined by the side-emitting optoelectronic device.

25 34. The light-emitting apparatus of claim 20, wherein the reflector includes a reflective surface having a saw-tooth pattern.

35. The light-emitting apparatus of claim 34, wherein the saw-tooth pattern includes a plurality of teeth, each tooth defining a reflective surface that is angled relative to a central axis defined by the side-emitting optoelectronic device to reflect light emitted by the side-emitting optoelectronic device along paths that are substantially perpendicular to the central axis.

36. The light-emitting apparatus of claim 20, further comprising a second reflector positioned to reflect emitted light along paths that are substantially perpendicular to a central axis defined by the side-emitting optoelectronic device.

37. The light-emitting apparatus of claim 36, wherein the second reflector is a conical reflector positioned above a top surface of the side-emitting optoelectronic device.

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38. The light-emitting apparatus of claim 36, wherein the second reflector includes a reflective coating applied to the top surface of the side-emitting optoelectronic device.

39. A light-emitting apparatus adapted to project high-intensity light in a desired arc, the apparatus comprising:

a side-emitting light source having a top, a bottom, and sides connecting the top and bottom, the light source operable to emit light of a desired color through the sides;

a base supporting the light source;

a window portion partially surrounding the light source, the window portion extending through a window arc equal to the desired arc; and

a multi-faceted reflector positioned to reflect light toward the window portion, the reflector and the window together completely encircling the sides of the light source, the facets of the multi-faceted reflector positioned to reflect the light through the window portion to produce a wedge-shaped directional beam of light.

40. The apparatus of claim 39, wherein the side-emitting light source includes a side-emitting light emitting diode.

41. The apparatus of claim 40, wherein the side emitting light emitting diode further comprises a truncated substantially spherical portion and a frustoconical portion having a concave top, the frustoconical portion disposed adjacent the truncated substantially spherical portion, the intersection of the frustoconical portion and the truncated substantially spherical portion defining a characteristic dimension.

42. The light-emitting apparatus of claim 39, wherein the light is a navigation light.

43. The light-emitting apparatus of claim 39, wherein the multi-faceted reflector includes a movable portion.

44. The light-emitting apparatus of claim 43, wherein the movable portion
5 tilts relative to a central axis defined by the side-emitting light source.

45. The light-emitting apparatus of claim 39, wherein the multi-faceted reflector includes a reflective surface having a saw-tooth pattern.

10 46. The light-emitting apparatus of claim 45, wherein the saw-tooth pattern includes a plurality of teeth, each tooth defining a reflective surface that is angled relative to a central axis defined by the side-emitting light source to reflect light emitted by the side-emitting light source along paths that are substantially perpendicular to the central axis.

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47. The light-emitting apparatus of claim 39, further comprising a second reflector positioned to reflect emitted light along paths that are substantially perpendicular to a central axis defined by the side-emitting light source.

20 48. The light-emitting apparatus of claim 47, wherein the second reflector is a conical reflector positioned above the top surface of the side-emitting light source.

49. The light-emitting apparatus of claim 39, further comprising a reflective coating applied to the top surface of the side-emitting light source.